

Surface Mount Unidirectional and Bidirectional Transient Voltage Suppressors

Features

- Voltage Range 5.0V - 170V
- 3000W Peak Pulse Power Dissipation
- For surface mounted applications
- Reliable low cost construction utilizing molded plastic technique
- Response Time is Typically < 1 ns
- Uni-direction, less than 5.0ns for Bi-direction, from 0 Volts to BV min
- ESD Rating of above 16 kV per Human Body Model
- ESD Rating of above 30 kV (Contact Discharge) per IEC61000-4-2
- EFT (Electrical Fast Transients) Rating of 40 A per IEC61000-4-4
- Plastic material has UL flammability classification 94V-0
- Typical IR less than 1uA above 10V
- Meets MSL 1 Requirements
- Solid-state silicon avalanche technology
- ROHS compliant



SMD

Ordering Information

Device	Qty per Reel	Reel Size
SMDJxxA(CA)	500	7Inch

“xx” = Working Peak Reverse Voltage

Maximum Ratings and Electrical Characteristics

Characteristics	Symbols	Value	Unit
Peak Power Dissipation At $T_j = 25^\circ\text{C}$, $T_p = 1\text{ms}$ (Note 1,2)	P_{PK}	3000	W
Peak Forward Surge Current 8.3ms single half sine-wave super	I_{FSM}	300	A
Lead Soldering Temperature	T_L	260 (10 sec.)	$^\circ\text{C}$
Operating Temperature Range	T_J	-55 to +155	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +175	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. Non-repetitive current pulse, per fig. 4 and derated above $T_A = 25^\circ\text{C}$ per fig.1.
2. Thermal Resistance junction to Lead
3. 8.3ms single half-sine wave duty cycle= 4 pulses maximum per minute (unidirectional units only).
4. Ratings at 25°C ambient temperature unless otherwise specified.
5. Single phase, half wave, 60Hz, resistive or inductive load.
6. For Capacitive Load, Derate Current By 20%



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TRANSIENT VOLTAGE SUPPRESSOR

PART NO. 3.0SMDJ5.0A(CA)-3.0SMDJ170A(CA)

**Electrical Characteristics (Tamb=25°C Unless Otherwise Specified)**

SMDJ PART NUMBER		MARKING CODE		VRWM	VBR @ IT (V)		IT	IR @ VRWM	VC(Max)	IPP(Max)
Uni-polar	Bi-polar	Uni	Bi	(V)	Min	Max	(mA)	(uA)	(V)	(A)
SMDJ5.0A	SMDJ5.0CA	HDE	IDE	5	6.4	7.35	10	800	9.2	326.1
SMDJ6.0A	SMDJ6.0CA	HDG	IDG	6	6.67	7.89	10	800	10.3	291.3
SMDJ6.5A	SMDJ6.5CA	HDK	IDK	6.5	7.22	8.3	10	500	11.2	267.9
SMDJ7.0A	SMDJ7.0CA	HDM	IDM	7	7.78	8.95	10	200	12	250
SMDJ7.5A	SMDJ7.5CA	HDP	IDP	7.5	8.33	9.58	1	100	12.9	232.6
SMDJ8.0A	SMDJ8.0CA	HDR	IDR	8	8.89	10.23	1	50	13.6	220.6
SMDJ8.5A	SMDJ8.5CA	HDT	IDT	8.5	9.44	10.82	1	20	14.4	208.3
SMDJ9.0A	SMDJ9.0CA	HDV	IDV	9	10	11.5	1	10	15.4	194.8
SMDJ10A	SMDJ10CA	HDX	IDX	10	11.1	12.8	1	5	17	176.5
SMDJ11A	SMDJ11CA	HDZ	IDZ	11	12.2	14	1	5	18.2	164.8
SMDJ12A	SMDJ12CA	HEE	IEE	12	13.3	15.3	1	5	19.9	150.8
SMDJ13A	SMDJ13CA	HEG	IEG	13	14.4	16.5	1	5	21.5	139.5
SMDJ14A	SMDJ14CA	HEK	IEK	14	15.6	17.9	1	5	23.2	129.3
SMDJ15A	SMDJ15CA	HEM	IEM	15	16.7	19.2	1	5	24.4	123
SMDJ16A	SMDJ16CA	HEP	IEP	16	17.8	20.5	1	5	26	115.4
SMDJ17A	SMDJ17CA	HER	IER	17	18.9	21.7	1	5	27.6	108.7
SMDJ18A	SMDJ18CA	HET	IET	18	20	23.3	1	5	29.2	102.7
SMDJ20A	SMDJ20CA	HEV	IEV	20	22.2	25.5	1	5	32.4	92.6
SMDJ22A	SMDJ22CA	HEX	IEX	22	24.4	28	1	5	35.5	84.5
SMDJ24A	SMDJ24CA	HEZ	IEZ	24	26.7	30.7	1	5	38.9	77.1
SMDJ26A	SMDJ26CA	HFE	IFE	26	28.9	33.2	1	5	42.1	71.3
SMDJ28A	SMDJ28CA	HFG	IFG	28	31.1	35.8	1	5	45.4	66.1
SMDJ30A	SMDJ30CA	HFK	IFK	30	33.3	38.3	1	5	48.4	62
SMDJ33A	SMDJ33CA	HFM	IFM	33	36.7	42.2	1	5	53.3	56.3
SMDJ36A	SMDJ36CA	HFP	IFP	36	40	46	1	5	58.1	51.6
SMDJ40A	SMDJ40CA	HFR	IFR	40	44.4	51.1	1	5	64.5	46.5
SMDJ43A	SMDJ43CA	HFT	IFT	43	47.8	54.9	1	5	69.4	43.2
SMDJ45A	SMDJ45CA	HFV	IFV	45	50	57.5	1	5	72.7	41.3
SMDJ48A	SMDJ48CA	HFX	IFX	48	53.3	61.3	1	5	77.4	38.8
SMDJ51A	SMDJ51CA	HFZ	IFZ	51	56.7	65.2	1	5	82.4	36.4
SMDJ54A	SMDJ54CA	HGE	IGE	54	60	69	1	5	87.1	34.4
SMDJ58A	SMDJ58CA	HGG	IGG	58	64.4	74.1	1	5	93.6	32.1
SMDJ60A	SMDJ60CA	HGK	IGK	60	66.7	76.7	1	5	96.8	31
SMDJ64A	SMDJ64CA	HGM	IGM	64	71.1	81.8	1	5	103	29.1
SMDJ70A	SMDJ70CA	HGP	IGP	70	77.8	89.5	1	5	113	26.5
SMDJ75A	SMDJ75CA	HGR	IGR	75	83	95.8	1	5	121	24.8
SMDJ78A	SMDJ78CA	HGT	IGT	78	86	99.7	1	5	126	23.8
SMDJ85A	SMDJ85CA	HGV	IGV	85	94	108.2	1	5	137	21.9
SMDJ90A	SMDJ90CA	HGX	IGX	90	100	115.5	1	5	146	20.5



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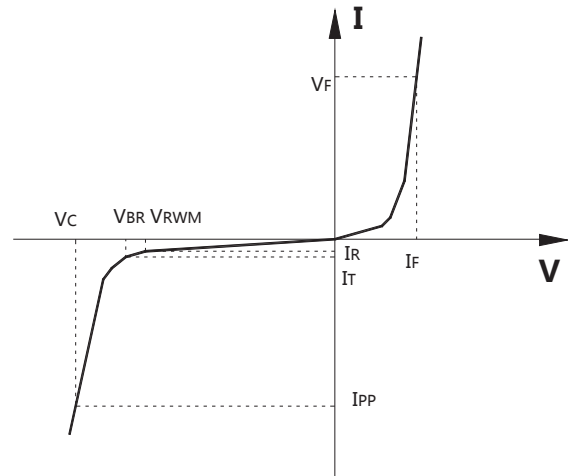
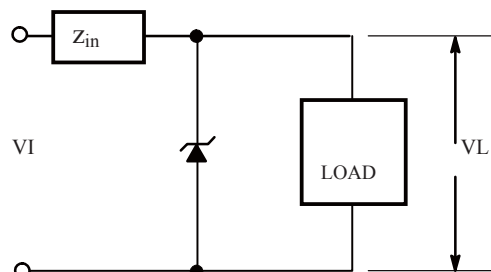
ZENESD®**TRANSIENT VOLTAGE SUPPRESSOR****PART NO. 3.0SMDJ5.0A(CA)-3.0SMDJ170A(CA)****Electrical Characteristics (Tamb=25°C Unless Otherwise Specified)**

SMDJ PART NUMBER		MARKING CODE		VRWM	VBR @ IT (V)		IT	IR @ VRWM	VC(Max)	IPP(Max)
Uni-polar	Bi-polar	Uni	Bi	(V)	Min	Max	(mA)	(uA)	(V)	(A)
SMDJ100A	SMDJ100CA	HGZ	IGZ	100	111	128	1	5	162	18.5
SMDJ110A	SMDJ110CA	HHE	IHE	110	122	140.5	1	5	177	16.9
SMDJ120A	SMDJ120CA	HHG	IHG	120	133	153	1	5	193	15.5
SMDJ130A	SMDJ130CA	HHK	IHK	130	144	165.5	1	5	209	14.4
SMDJ150A	SMDJ150CA	HHM	IHM	150	167	192.5	1	5	243	12.3
SMDJ160A	SMDJ160CA	HHP	IHP	160	178	205	1	5	259	11.6
SMDJ170A	SMDJ170CA	HHR	IHR	170	189	217.5	1	5	275	10.9

For bidirectional type having Vrwm of 10 volts and less, the IR limit is double.

The available parts are "A" type only, the parts without A (VBR is $\pm 10\%$) is not available

Symbol	Parameter
V_{RWM}	Working Peak Reverse Voltage
V_{BR}	Breakdown Voltage @ I_T
V_C	Clamping Voltage @ I_{PP}
I_T	Test Current
I_R	Leakage current at V_{RWM}
I_{PP}	Peak pulse current

**Typical Protection Circuit**



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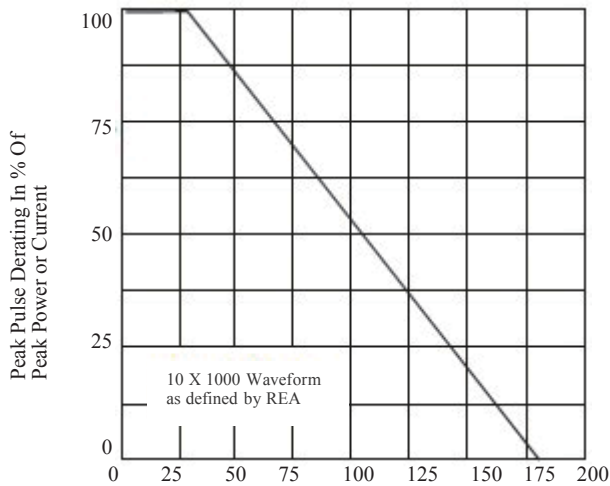
TRANSIENT VOLTAGE SUPPRESSOR

PART NO. 3.0SMDJ5.0A(CA)-3.0SMDJ170A(CA)



Typical Electrical Characteristics Applications

Rating and Characteristics Curves



T_a , Ambient Temperature ($^{\circ}\text{C}$)

Fig. 1, Pulse Derating Curve

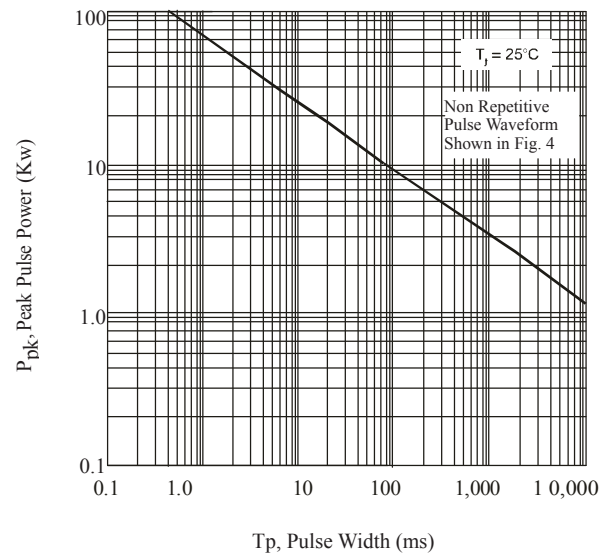


Fig. 2, Pulse Rating Curve

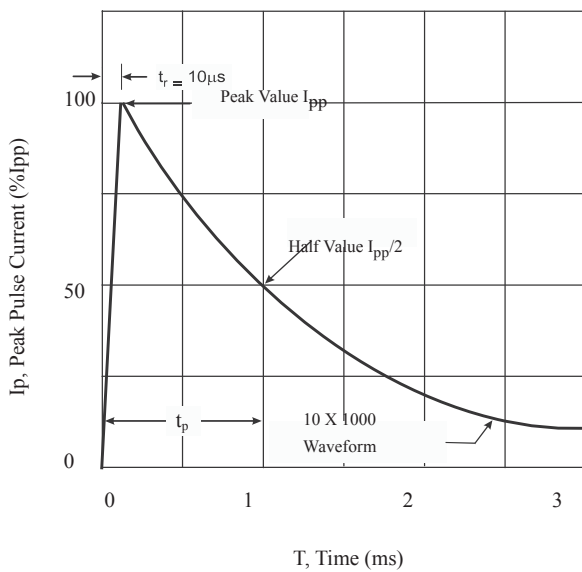


Fig. 3, Pulse Waveform

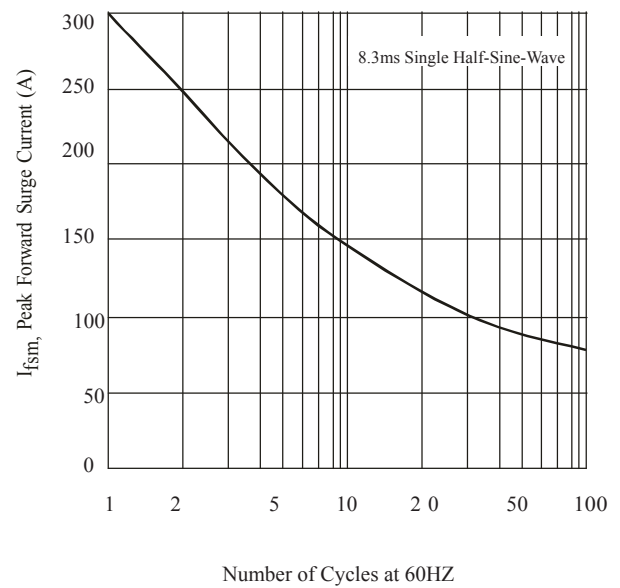


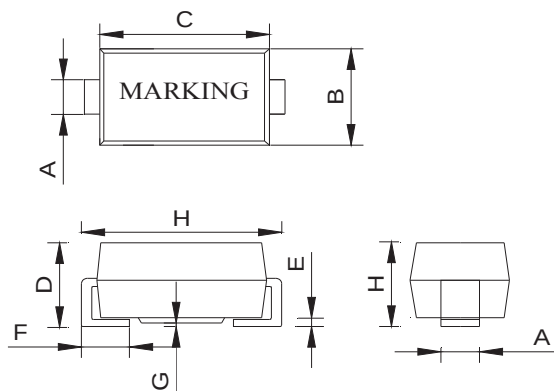
Fig. 4, Maximum Non-Repetitive Surge Current



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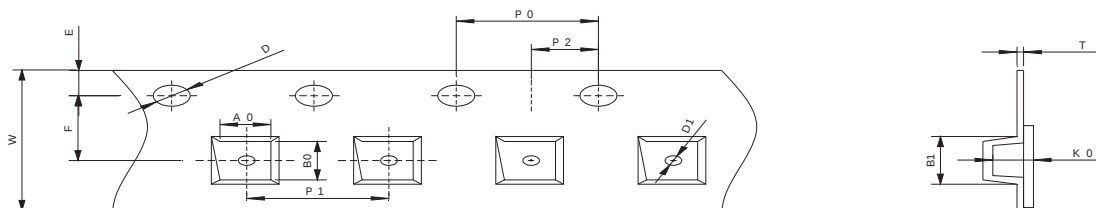
ZENESD®**TRANSIENT VOLTAGE SUPPRESSOR****PART NO. 3.0SMDJ5.0A(CA)-3.0SMDJ170A(CA)****Package Information****Mechanical Data**

- Case: SMC
- Case Material: Molded Plastic. UL Flammability
- Classification Rating 94V-0
- Polarity Indicator: Cathode Band (Note: Bi-directional devices have no polarity indicator.)
- Weight: 0.21 grams (approximate)



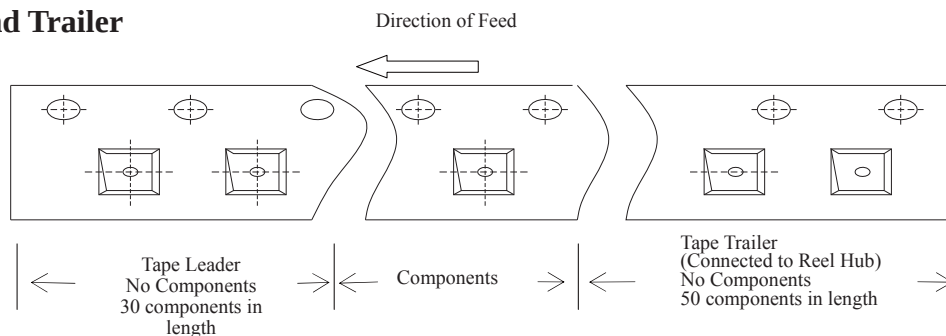
SMC

DMI	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
A	2.90	3.05	3.20	0.114	0.120	0.126
B	5.59	5.90	6.20	0.220	0.232	0.244
C	6.60	6.89	7.11	0.260	0.271	0.290
D	2.06	2.34	2.62	0.081	0.092	0.103
E	7.75	7.94	8.13	0.305	0.313	0.320
F	0.76	1.14	1.52	0.0299	0.045	0.0598
G	-	-	0.203	-	-	0.0799
H	0.125	0.215	0.305	0.0019	0.008	0.0120

SMC Reel Dim

A0	B0	B1	D	D1	E	F	K0	T	W	P0	P1	P2
6.3	8.6	8.8	1.5	1.5	1.75	7.5	3.0	0.50	16.0	4.0	8.0	2.0

Dimension is in mm

Leader and Trailer

The LEADER is a minimum of 30 components in length and it consists of empty cavities with sealed cover tape

The TRAILER is a minimum of 50 components in length and it consists of empty cavities with sealed cover tape.